

### **Abstract of the Disclosure**

Single sideband (SSB) mixers and methods of extracting a SSB signal, which are capable of outputting a single frequency using a plurality of mixers and a local oscillating frequency without having to implement phase-shifting. In one embodiment, a single

5 sideband (SSB) mixer comprises a first mixer and a second mixer, wherein the first and second mixers multiply an input IF (intermediate frequency) signal by a local IF signal having the same frequency of the input IF signal; a band-pass filter which passes upper sideband signal output from the first mixer; a third mixer which multiplies the upper sideband signals output from the band-pass filter by a LO (local oscillating) signal; a

10 fourth mixer which multiplies the signals output from the second mixer by the LO signal; and a subtraction device that subtracts output signals of the third mixer from output signals of the fourth mixer. Accordingly, a quadrature local oscillator which displaces a phase of a local oscillating signal by  $90^\circ$  at a high frequency is not required. Also, since the SSB mixer applies the same local oscillating frequency signal to each mixer, the

15 rejection characteristics against undesired signals can be achieved to a level of about 70 dB, experimentally.